If $p=3$, $q=2$, then $n=\frac{m}{m^2-30}$, $=1$ when $m=6$; $\therefore x=13$, $y=11$, and the numbers are 168 and 120.

If $p=4$, $q=1$, then $n=\frac{m}{m^2-60}$, $=2$ whem $m=8$; and then $x=34$, $y=31$, and the numbers are 1155 and 960.

PROBLEMS.

16. Proposed by H. W. DRAUGHON, Clinton, Louisiana.

Find three numbers such that the cube of any one plus the sum of the squares of the other two will be a square.

17. Proposed by ARTEMAS MARTIN, LL. D., U. S Coast and Geodetic Survey Office, Washington, D. C.

Is it possible to find two positive whole numbers such that each of them, and also their sum and their difference, when *diminished* by unity shall all be squares?

Solutions to these problems should be received on or before December 1st.

AVERAGE AND PROBABILITY.

Conducted by B. F. FINKEL, Kidder, Mo. All contributions to this department should be sent to him.

SOLUTIONS TO PROBLEMS.

8. Proposed by G. B. M. ZERR, A. M., Principal of High School, Staunton, Virginia.

Prove that the mean area of all triangles having their vertices upon the surface of a given triangle and bases parallel to the base of the given triangle, is $\frac{13}{210}$ (area of given triangle).

I. Solution by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

Represent AD by a, BC by b, and the area of $\triangle ABC$, $=\frac{1}{2}ab$, by $\triangle$.